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TEM CENTER 100 A

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<170> PatentIn Ver. 2.1

<151> 1997-12-03

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<213> Apoptin-Associating Clone

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Ile Leu Lys Glu His Ser Pro Asp Glu Phe Ile Lys Asp Glu Gln Asn 20 25 30

Lys Gly Leu Ile Asp Glu Ile Thr Lys Lys Asn Ile Gln Leu Lys Lys 35 40 45

Glu Ile Gln Lys Leu Glu Thr Glu Leu Gln Glu Ala Thr Lys Glu Phe 50 55 60

Gln Ile Lys Glu Asp Ile Pro Glu Thr Lys Met Lys Phe Leu Ser Val 65 70 75 80

Glu Thr Pro Glu Asn Asp Ser Gln Leu Ser Asn Ile Ser Cys Ser Phe 90 95 85

Gln Val Ser Ser Lys Val Pro Tyr Glu Ile Gln Lys Gly Gln Ala Leu 100 105 110

Ile Thr Phe Glu Lys Glu Glu Val Ala Gln Asn Val Val Ser Met Ser 120 125 115

Lys His His Val Gln Ile Lys Asp Val Asn Leu Glu Val Thr Ala Lys 130 135 140

Pro Val Pro Leu Asn Ser Gly Val Arg Phe Gln Val Tyr Val Glu Val 155 150



Ser Lys Met Lys Ile Asn Val Thr Glu Ile Asp Asp Thr Leu Arg Glu 165 170 175

Asp Gln Met Arg Asp Lys Leu Glu Leu Ser Phe Ser Lys Ser Arg Asn 180 185 190

Gly Arg Arg Cys Gly Pro Arg Gly Thr Met Thr Asp Ser Pro Gly
195 200 205

Val Gln Ser Ser Arg Leu Val Glu Ile Gly Ser 210 215

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Pro Asp Glu Phe Ile Lys Asp Glu Gln Asn Lys Gly Leu Ile Asp Glu 20 25 30

Ile Thr Lys Lys Asn Ile Gln Leu Lys Lys Glu Ile Gln Lys Leu Glu
35 40 45

Thr Glu Leu Gln Glu Ala Thr Lys Glu Phe Gln Ile Lys Glu Asp Ile 50 55 60

Pro Glu Thr Lys Met Lys Phe Leu Ser Val Glu Thr Pro Glu Asn Asp 65 70 75 80

Ser Gln Leu Ser Asn Ile Ser Cys Ser Phe Gln Val Ser Ser Lys Val 85 90 95

Pro Tyr Glu Ile Gln Lys Gly Gln Ala Leu Ile Thr Phe Glu Lys Glu 100 105 110

Glu Val Ala Gln Asn Val Val Ser Met Ser Lys His His Val Gln Ile 115 120 125

Lys Asp Val Asn Leu Glu Val Thr Ala Lys Pro Val Pro Leu Asn Ser 130 135 140

Gly Val Arg Phe Gln Val Tyr Glu Val Ser Lys Met Lys Ile Asn Val



145 150 155 160

Thr Glu Ile Pro Asp Thr Leu Arg Glu Asp Gln Met Arg Asp Lys Leu 165 170 175

Glu Leu Ser Phe Ser Lys Phe Arg Asn Gly Gly Gly Glu Val Asp Arg 180 185 190

Val Asp Tyr Asp Arg Gln Ser Gly Ser Ala Val Ile Thr Phe Val Glu 195 200 205

Ile Gly Val Asp Lys Ile Leu Lys Lys Glu Tyr Pro Leu Pro Ile 210 215 220

Asn Gln Thr Cys His Arg Val Thr Val Ser Pro Tyr Thr Glu Ile His 225 230 235 240

Leu Lys Lys Tyr Gln Ile Phe Ser Gly Thr Ser Lys Arg Thr Val Leu 245 250 255

Leu Thr Gly Met Glu Gly Ile Gln Met Asp Glu Glu Ile Val Glu Asp
260 265 270

Leu Ile Asn Ile His Phe Gln Arg Ala Lys Asn Gly Gly Glu Val 275 280 285

Asp Val Val Lys Cys Ser Leu Gly Gln Pro His Ile Ala Tyr Phe Glu 290 295 300

Glu

305

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Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln Val Gln Pro Leu
20 25 30

Glu Leu Pro Met Val Thr Thr Ile Gln Val Ser Ser Gln Leu Ser Gly

Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu Arg Leu Ser Glu 50 55 60

40

Glu Glu Leu Leu Asp Lys Leu Glu Ile Phe Phe Gly Lys Thr Arg Asn 65 70 75 80

Gly Gly Gly Asp Val Asp Val Arg Glu Leu Leu Pro Gly Ser Val Met 85 90 95

Leu Gly Phe Ala Arg Asp Gly Val Ala Gln Arg Leu Cys Gln Ile Gly
100 105 110

Gln Val His Ser Ala Thr Gly Trp Ala Ser Ser Pro Ser Glu Ser Leu 115 120 125

Ser Val Cys Glu Trp Gly Asp Pro Glu Gly 130 135

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Met Ser Ala Pro Leu Asp Ala Ala Leu His Ala Leu Gln Glu Gln 1 5 15

Ala Arg Leu Lys Met Arg Leu Trp Asp Leu Gln Gln Leu Arg Lys Glu 20 25 30

Leu Gly Asp Ser Pro Lys Asp Lys Val Pro Phe Ser Val Pro Lys Ile 35 40 45

Pro Leu Val Phe Arg Gly His Thr Gln Gln Asp Pro Glu Val Pro Lys
50 55 60

Ser Leu Val Ser Asn Leu Arg Ile His Cys Pro Leu Leu Ala Gly Ser 65 70 75 80



Ala Leu Ile Thr Phe Asp Asp Pro Lys Val Ala Glu Gln Val Leu Gln 85 90 95

Gln Lys Glu His Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln 100 105 110

Val Gln Pro Leu Glu Leu Pro Met Val Thr Thr Ile Gln Val Ser Ser 115 120 125

Gln Leu Ser Gly Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu 130 135 140

Arg Leu Ser Glu Glu Leu Leu Asp Lys Leu Glu Ile Phe Phe Gly
145 150 155 160

Lys Thr Arg Asn Gly Gly Gly Asp Val Asp Val Arg Glu Leu Leu Pro 165 170 175

Gly Ser Val Met Leu Gly Phe Ala Arg Asp Gly Val Ala Gln Arg Leu 180 185 190

Cys Gln Ile Gly Gln Phe Thr Val Pro Leu Gly Gly Gln Gln Val Pro 195 200 205

Leu Arg Val Ser Pro Tyr Val Asn Gly Glu Ile Gln Lys Ala Glu Ile 210 215 220

Arg Ser Gln Pro Val Pro Arg Ser Val Leu Val Leu Asn Ile Pro Asp 225 230 235 240

Ile Leu Asp Gly Pro Glu Leu His Asp Val Leu Glu Ile His Phe Gln 245 250 255

Lys Pro Thr Arg Gly Gly Gly Gly Arg Gly Pro Asp Ser Arg Thr Pro 260 265 270

Arg Thr Ala Gly Pro Ser Ser Leu His Leu 275 280

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His Glu Gly Arg Ile His Cys Pro Leu Leu Ala Gly Ser Ala Leu Ile



5

1

10

15

Thr Phe Asp Asp Pro Lys Val Ala Glu Gln Val Leu Gln Gln Lys Glu
20 25 30

His Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln Val Gln Pro 35 40 45

Leu Glu Leu Pro Met Val Thr Thr Ile Gln Val Met Val Ser Ser Xaa 50 55 60

Leu Ser Gly Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu Arg
65 70 75 80

Leu Xaa Glu Glu Leu Leu Asp Lys Leu Asp Leu Leu Trp Gln Xaa 85 90 95

Xaa Glu Arg Xaa Trp Arg Cys Gly Arg Ser Gly Ala Thr Ala Arg Glu 100 105 110

Cys His Ala Gly Val Cys Tyr Gly Trp Ser Gly Ser Ala Ser Val Pro 115 120 125

Asn Arg Pro Val His Lys Cys His Trp Val Gly Ser Lys Ser Leu Glu 130 135 140

Ser Leu Xaa Tyr Trp Cys Ser Xaa Ser Xaa Leu Gly Leu Ala Pro Xaa 165 170 175

Xaa Met Xaa Ser Gly Arg Phe Asn Xaa Xaa Ser Pro Xaa Xaa Xaa Xaa 180
185
190

Gly Lys Xaa Xaa Pro Xaa Xaa Ser Xaa Xaa Xaa Xaa Ser Xaa Ala 195 200 205

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Arg Leu Arg Asn Gly His Val Gly Ile Ser Phe Val Pro Lys Glu Thr
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Gly Glu His Leu Val His Val Lys Lys Asn Gly Gln His Val Ala Ser 20 25 30

Ser Pro Ile Pro Val Val Ile Ser Gln Ser Glu Ile Gly Asp Ala Ser 35 40 45

Arg Val Arg Val Ser Gly Gln Gly Leu His Glu Gly His Thr Phe Glu 50 60

Pro Ala Glu Phe Ile Ile Asp Thr Arg Asp Ala Gly Tyr Gly Gly Leu 65 70 75 80

Ser Leu Ser Ile Glu Gly Pro Ser Lys Val Asp Ile Asn Thr Glu Asp 85 90 95

Leu Glu Asp Gly Thr Cys Arg Val Thr Tyr Cys Pro Thr Glu Pro Gly
100 105 110

Asn Tyr Ile Ile Asn Ile Lys Phe Ala Asp Gln His Val Pro Gly Ser 115 120 125

Pro Phe Ser Val Lys Val Thr Gly Glu Gly Arg Val Lys Glu Ser Ile 130 135 140

Thr Arg Arg Arg Arg Ala Pro Ser Val Ala Asn Val Gly Ser His Cys
145 150 155 160

Asp Leu Ser Leu Ile Pro Glu Ile Ser Ile Gln Asp Met Thr Ala Gln
165 170 175

Val Thr Ser Pro Ser Gly Lys Thr His Glu Ala Glu Ile Val Glu Gly
180 185 190

Glu Asn His Thr Tyr Cys Ile Arg Phe Val Pro Ala Glu Met Gly Thr 195 200 205

His Thr Val Ser Val Lys Tyr Lys Gly Gln His Val Pro Gly Ser Pro 210 215 220

Phe Gln Phe Thr Val Gly Pro Leu Gly Glu Gly Gly Ala His Lys Val 225 230 235 240

Arg Ala Gly Gly Pro Gly Leu Glu Arg Lys Glu Ala Gly Val Pro Ala 245 250 255

Glu Phe Ser Ile Trp Thr Arg Glu Ala Gly Ala Gly Gly Leu Ala Ile 260 265 270



Ala Val Glu Gly Pro Ser Lys Ala Glu Ile Ser Phe Glu Asp Arg Lys 275 280 285

Asp Gly Ser Cys Gly Val Ala Tyr Val Val Gln Glu Pro Gly Asp Tyr 290 295 300

Glu Val Ser Val Lys Phe Asn Glu Glu His Ile Pro Asp Ser Pro Phe 305 310 315

Val Val Pro Val Ala Ser Pro Ser Gly Asp Ala Arg Arg Leu Thr Val 325 330 335

Ser Ser Leu Gln Glu Ser Gly Leu Lys Val Asn Gln Pro Ala Ser Phe 340 345 350

Ala Val Ser Leu Asn Gly Ala Lys Gly Ala Ile Asp Ala Lys Val His 355 360 365

Ser Pro Ser Gly Ala Leu Glu Glu Cys Tyr Val Thr Glu Ile Asp Gln 370 375 380

Asp Lys Tyr Ala Val Arg Phe Ile Pro Arg Glu Asn Gly Val Tyr Leu 385 390 395 400

Ile Asp Val Lys Phe Asn Gly Thr His Ile Pro Gly Ser Pro Phe Lys 405 410 415

Ile Arg Val Gly Glu Pro Gly His Gly Gly Asp Pro Gly Leu Val Ser
420 425 430

Ala Tyr Gly Ala Gly Leu Glu Gly Gly Val Thr Gly Asn Pro Ala Glu
435 440 445

Phe Val Val Asn Thr Ser Asn Ala Gly Ala Gly Ala Leu Ser Val Thr 450 460

Ile Asp Gly Pro Ser Lys Val Lys Met Asp Cys Gln Glu Cys Pro Glu 465 470 475 480

Gly Tyr Arg Val Thr Tyr Thr Pro Met Ala Pro Gly Ser Tyr Leu Ile 485 490 495

Ser Ile Lys Tyr Gly Gly Pro Tyr His Ile Gly Gly Ser Pro Phe Lys 500 505 510

Ala Lys Val Thr Gly Pro Arg Leu Val Ser Asn His Ser Leu His Glu 515 520 525



Thr Ser Ser Val Phe Val Asp Ser Leu Thr Lys Ala Thr Cys Ala Pro 530 540

Gln His Gly Ala Pro Gly Pro Gly Pro Ala Asp Ala Ser Lys Val Val 545 550 555 560

Ala Lys Gly Leu Gly Leu Ser Lys Ala Tyr Val Gly Gln Lys Ser Ser 565 570 575

Phe Thr Val Asp Cys Ser Lys Ala Gly Asn Asn Met Leu Leu Val Gly 580 585 590

Val His Gly Pro Arg Thr Pro Cys Glu Glu Ile Leu Val Lys His Val
595 600 605

Gly Ser Arg Leu Tyr Ser Val Ser Tyr Leu Leu Lys Asp Lys Gly Glu 610 620

Tyr Thr Leu Val Val Lys Trp Gly His Glu His Ile Pro Gly Ser Pro 625 635 640

Tyr Arg Val Val Pro 645

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<211> 211

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Thr Ser Asn Ala Gly Ala Gly Ala Leu Ser Val Thr Ile Asp Gly Pro 20 25 30

Ser Lys Val Lys Met Asp Cys Gln Glu Cys Pro Glu Gly Tyr Arg Val 35 40 45

Thr Tyr Thr Pro Met Pro Gly Ser Tyr Leu Ile Ser Ile Lys Tyr Gly 50 55 60

Gly Pro Tyr His Ile Gly Gly Ser Pro Phe Lys Ala Lys Val Thr Gly 65 70 75 80

Pro Arg Leu Val Ser Asn His Ser Leu His Glu Thr Ser Ser Val Phe
85 90 95



Val Asp Ser Leu Thr Lys Ala Thr Cys Ala Pro His His Gly Ala Pro 100 105 110

Gly Pro Gly Pro Ala Asp Ala Ser Lys Val Val Ala Lys Gly Leu Gly 115 120 125

Leu Ser Lys Ala Tyr Val His Lys Ser Ser Phe Thr Val Asp Cys Ser 130 135 140

Lys Ala Cys Ile Ile Met Leu Leu Val Gly Val His Gly Pro Trp Thr 145 150 155 160

Pro Cys Asp Glu Ile Leu Val Lys Ala Arg Gly Gln Pro Ala Leu Gln 165 170 175

Arg Val Leu Thr Cys Phe Lys Asp Lys Gly Glu Val His Thr Gly Gly 180 185 190

Gln Asn Gly Gly Asp Tyr Gln Ile Pro Cys Lys Pro Leu Pro Leu Cys 195 200 205

Gly Cys Pro 210

<210> 13

<211> 213

<212> PRT

<213> Apoptin-Associating Clone

<400> 13

His Glu Gly Arg Pro Thr Glu Pro Gly Asn Tyr Ile Ile Asn Ile Lys
1 5 10 15

Phe Ala Asp Gln His Val Pro Gly Ser Pro Phe Ser Val Lys Val Thr
20 25 30

Gly Glu Gly Arg Val Lys Glu Ser Ile Thr Arg Arg Arg Ala Pro 35 40 45

Ser Val Ala Asn Val Gly Ser His Cys Asp Leu Ser Leu Lys Ile Pro 50 55 60

Glu Ile Ser Ile Gln Asp Met Thr Ala Gln Val Thr Ser Pro Ser Gly
65 70 75 80

Lys Thr His Glu Ala Glu Ile Val Glu Gly Glu Asn His Thr Tyr Cys

B

Ile Arg Phe Val Pro Ala Glu Met Gly Thr His Thr Val Ser Val Lys
100 105 110

Tyr Lys Gly Gln His Val Pro Gly Ser Pro Phe Gln Phe Thr Val Gly 115 120 125

Pro Leu Gly Glu Gly Gly Ala His Xaa Val Arg Ala Gly Gly Pro Gly 130 135 140

Gly Lys Leu Val Leu Glu Ala Trp Pro Leu Leu Ser Xaa Ala Pro Ala 165 170 175

Xaa Leu Xaa Ser Leu Leu Arg Thr Ala Arg Thr Ala Pro Val Val Leu 180 185 190

Leu Met Leu Val Xaa Glu Pro Ser Asp Xaa Asn Pro Xaa Gln Val Ser 195 200 205

Thr Lys Glu His Xaa 210